

**REMARKS/ARGUMENTS**

Claims 1-81 and 83-133 were pending before this amendment. Claims 1, 8-9, 14, 18-19, 24, 28, 32, 37, 66, 76, 79, 112-121, and 123-133 have been amended; and claims 2-3, 5, 10-13, 15-18, 20-23, 25-27, 29-31, 33-35, 38-65, 67-75, 77-78, 80-81, 83-111, 114, 122, 125, and 129 remain unchanged. Thus, claims 1-81 and 83-133 remain pending.

Claims 6, 36, and 38-54 are allowed.

Claims 14-17, 24-35 and 66-81 are objected to as being dependent upon a rejected base claim, but would be allowable if written in independent form.

Claims 1-13, 18-23, 37, 55-65, 83-91, 114, 116-121, and 125-133 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,700,672 to Jones et al. (Jones) in view of US Patent No. 6,700,672 to Cook et al. (Cook).

Claims 92-108 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones in view of Cook and further in view of US Patent No. 6,577,312 to Deering et al. (Deering).

Claims 109-111, and 122 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deering in view of Jones.

Claims 112, 113, 123, and 124 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones.

Claim 115 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cook.

All the pending claims of the subject application are believed to comply with all requirements of 35 U.S.C. Accordingly, Applicant requests examination and allowance of all pending claims.

**Claims Allowed**

Applicants earnestly thank the Examiner for indicating that claims 6, 36 and 38-54 are allowed.

**Claims Rewritten in Independent Form and Allowable**

Applicants also thank the Examiner for indicating the allowability of claims 14-17, 24-35, and 66-81, if properly rewritten in independent form. Each one of the claims 14, 24, 28, 32, 66, 76, 79 has been rewritten in independent form to include all of the limitations of its base claim and any intervening claims, and is thus believed to allowable.

Claims 15-17, 25-27, 29-31, 33-35, 67-75, 77-78, and 80-81 depend from claims 14, 24, 28, 32, 66, 76, and 79, respectively, and each includes all of the limitations of the claim from which it depends. Therefore, claims 15-17, 25-27, 29-31, 33-35, 67-75, 77-78, and 80-81 are also believed to be allowable, for at least the reasons stated above with regard to claims 14, 24, 28, 32, 66, 76, and 79.

**35 USC 103 rejection, Jones in view of Cook**

Claims 1-5, 7-13, 18-23, 37, 55-65, 83-119, 121-130, 132, and 133

Claim 1 is allowable over Jones and Cook, either alone or in combination, as those references fail to disclose or suggest all the elements of claim 1, as amended. For example, claim 1 recites: "*distributing a set of line samples, each having an orientation, across an object scene such that the distribution of the orientations of the set of line samples is non-regular.*" The rejection asserts that Jones distribution of a set of line samples (*See Jones*, col. 6, lines 45-59 and col. 8, lines 31-41) and Cook's selection of sample points in a non-regular distribution (*See Cook*, col. 85, lines 52-54 and lines 64-68) combine to give a non-regular distribution of line samples.

**Prior Art**

Jones is directed to a method for determining the weighted coverage value (WCV) that an object contributes to a pixel. Jones uses a uniform grid of sampling points in order to define pixels, which would be squares with the sampling points at the centers.<sup>1</sup> *See Jones*, Figs. 11a-b. Jones also uses these sampling points in order to define its line samples. *See Jones*, Figs. 1a-e. The line sample is straight, centered on a sampling point. *See Jones*, col.3, lines 1-3. In

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<sup>1</sup> Jones use of the word pixel is unorthodox and actually corresponds to a sampling point. *See Jones*, col.1, lines 20-22.

Jones's examples of using multiple line samples for each sampling point, the line samples form a regular pattern where the lines are perpendicular to each other. *See Jones*, Figs. 7a-b and 10a-b.

Cook is directed to a method where "the object scene information in the computer database is sampled by points that are pseudo-randomly distributed in one or several functions or dimensions." *See Cook*, col. 1, lines 58-61.

### **Argument**

Since both Jones and Cook use sample points, the pseudo-randomness of Cook would be used to alter the positions of Jones's sample points, and not the orientations of the line samples. Jones has one sample point centered in each square pixel where the vertical and horizontal lines intersect. *See Jones*, col. 6, lines 59-61. Even if the two perpendicular line samples taught by Jones were extended to many line samples, nothing in Jones suggests that the distribution of such line samples would be anything but a regular distribution of line samples separated by fixed angles. Randomly distributing these sample points per Cook would result in each sample point, and thus the intersection of the line samples, to reside randomly within each pixel. However, the orientations of the line samples would be in the regular distribution as defined in Jones. Thus, this combination of Jones and Cook does not disclose a distribution of the orientations of the set of line samples being non-regular.

Jones also describes having one line per pixel, where the line is oriented to be perpendicular to an edge. *See Jones*, col. 8, lines 31-41. Because the pixels form a regular array, the resulting collection of line samples likely reflects a regular pattern. *See e.g., Id.*, Fig. 13, block 1304 (showing regularly spaced line samples along edges of a triangle). This pattern would be unaltered by any displacement of the center of the lines as the line samples would still have the same orientation of being perpendicular to the edge. Thus, the second method taught by Jones et al. also does not disclose or suggest the non-regular distribution of the orientations of the line samples as recited in claim 1.

As claim 1 is allowable, dependent claims 2-5, 55-65, and 83-108 are also allowable for at least the same rationale.

Applicants submit that independent claims 7-9, 18-19, 37, 109, 113-119, 121-130, 132, and 133 should be allowable for at least the same rationale as discussed with respect to

claim 1. Claims 9-13 depend from claim 9; claims 20-23 depend from claim 19; and claims 110-111 depend from claim 109 and thus derive patentability at least therefrom.

Claim 9-13, 20-23, and 110-111

Claim 9 is allowable over Jones and Cook, either alone or in combination. Those references fail to disclose or suggest all the elements of claim 9, for at least two reasons. First, claim 9 recites: "*wherein the choosing step comprises: selecting a translation amount; and translating the line sample by reference to the translation amount.*" The rejection contends that Jones's example illustrating why two perpendicular line samples should be used in order to get accurate color contributions from an object discloses translating the line sample. *See Jones*, col. 6 lines 36-50.

Here, Jones is concerned with a line sample being oriented parallel to an edge. Fig. 6a shows one example where the object does not cover the pixel or line sample, and thus the contribution to the color (WCV) of the pixel 603 from object 602 is 0. A WCV=0 is not desirable in this case, since the pixel 603 is close to object 602. Fig. 6b shows another example where the object 602 is completely covering the pixel and line sample, and thus the WCV is 1. WCV is not a translation amount, but a weighted coverage value that gives a percentage of contribution of an object to a pixel given the proximity of the pixel to an object's edge. *See Jones*, col. 2, lines 22-25. In Jones, the line sample and pixel remain in the same place in the image plane, and thus do not disclose a translation amount or translating the line sample by reference to the translation amount. Accordingly, claim 9 is allowable over the cited references.

Second, claim 9 is allowable for at least the same rationale as discussed with respect to claim 1.

As claim 9 is allowable, dependent claims 10-13 are also allowable for at least the same rationale. Applicants submit that claims 20, 110, and 111 should be allowable for at least the same rationale as discussed with respect to claim 9. As claim 20 is allowable, dependent claims 21-23 are allowable for at least the same rationale.

Claim 10-12

Additionally, claim 10 is also allowable over Jones and Cook, either alone or in combination. Those references fail to disclose or suggest all the elements of claim 10, for at

least two reasons. First, claim 10 recites "*wherein the line sample is confined to an area of the object scene and the line sample is translated from a position on a perimeter of the area.*" The rejection contends that that Jones's example of a point in the middle of a thin object discloses a position on a perimeter of the area. *See Jones*, Figs. 3a-b and col. 5, lines 34-43.

Figs 3a shows a line sample 303 centered at a pixel 304 where the line sample spans the filter footprint 309. The filter footprint and the line sample are both centered at the pixel 304. Thus, the line sample is not at a position on the perimeter of the footprint 309, or any other area. Accordingly, claim 10 is allowable over the cited references.

Second, claim 10 is allowable for at least the same rationale as discussed with respect to claim 9.

As claim 10 is allowable, dependent claims 11-12 are allowable for at least the same rationale.

#### Claims 18-23 and 110

Claim 18 is allowable over Jones and Cook, either alone or in combination.

Those references fail to disclose or suggest all the elements of claim 18, for at least two reasons. First, claim 18 recites: "*selecting for each line sample an area defined by an intersection of the line sample and a region of the object scene within which each line sample is positioned; and controlling the selecting step so that a selection of the area from a range of possible areas is substantially uniform.*" The rejection contends that Jones's use of a filter function with a certain radius discloses an area defined by an intersection of the line sample and a region of the object scene. *See Jones*, col. 4, lines 8-38.

Jones chooses the filter footprint based on the Gaussian filter function being used. *See Jones*, lines 31-37. Thus, the filter footprint is not chosen by the intersection of the line with the square pixel (region of the object scene) in which the sampling point resides. Furthermore, Jones mentions that the filter function has a range of values from 0 to 1. *See Jones*, col. 4, lines 31-38. This is a range of function values which correspond to the WCV, and are not associated with an area. Accordingly, claim 18 is allowable over the cited references.

Second, claim 18 is allowable for at least the same rationale as discussed with respect to claim 1.

Applicants submit that claims 19 and 110 should be allowable for at least the same rationale as discussed with respect to claim 18. As claim 19 is allowable, dependent claims 20-23 are allowable for at least the same rationale.

Claim 37

Claim 37 is allowable over Jones and Cook, either alone or in combination. Those references fail to disclose or suggest all the elements of claim 37, for at least two reasons. First, claim 37 recites "*wherein the plane is selected by reference to a pseudorandom sequence of numbers.*"

As described above, applying cook to Jones would simply result in the sample points of Jones being selected randomly. Since a single point cannot define a plane, Jones and Cook do not disclose a plane selected by random numbers. Accordingly, claim 37 is allowable over the cited references.

Second, claim 37 is allowable for at least the same rationale as discussed with respect to claim 1.

Claims 114 and 125

Claim 114 is allowable over Jones and Cook, either alone or in combination. Those references fail to disclose or suggest all the elements of claim 114, for at least two reasons. First, claim 114 recites "*wherein a line sample is positioned within a boundary of each pixel in a non-regular pattern.*"

In Jones, the lines samples span the space from the sampling point (pixel in Jones) at the center of one pixel to the sampling point at the center of the next pixel. *See Jones*, Fig. 11a-b and col. 7 line 64- col. 8 line 1. The lines samples in Jones do not stay within the boundary of each pixel, but rather cross the boundary into the next pixel. Accordingly, claim 114 is allowable over the cited references.

Second, claim 114 is allowable for at least the same rationale as discussed with respect to claim 1.

Applicants submit that claim 129 should be allowable for at least the same rationale as discussed with respect to claim 114.

Claims 120 and 131

Claim 120 is allowable over Jones and Cook, either alone or in combination, as those references fail to disclose or suggest all the elements of claim 120. For example, claim 120 recites "*defining a plurality of substantially non-overlapping portions within said areas; assigning a line sample to a non-overlapping portion by reference to a non-regular sequence of numbers.*"

In Fig. 5 of Cook, the location of the sample point for each of the four areas is pseudo-randomly determined. *See Cook*, col. 5, lines 3-5. In contrast, claim 5 recites assigning a line sample to a different portion depending on a non-regular number. The non-regular number selects which portion the line sample resides, and not the location of the line sample within the selected portion. Accordingly, claim 120 is allowable over the cited references. Applicants submit that claim 131 should be allowable for at least the same rationale as discussed with respect to claim 120.

**35 USC 103 rejection, Jones in view of Cook and Deering**

Claims 92-108

As claim 1 is allowable, claims 92-108 which depend therefrom are also allowable for at least the same rationale.

**35 USC 103 rejection, Deering in view of Jones**

Claims 109-111, 122

Claim 109 is allowable over Jones, Cook, or Deering, either alone or in combination, as those references fail to disclose or suggest all the elements of claim 1109. For example, claim 109 recites "*orienting the line sample by reference to a non-regular sequence of numbers.*" The rejection asserts that orienting the line sample by reference to a non-regular sequence of numbers is rejected on the same grounds as claim 1.

As mentioned in claim 1, the combination of Jones and Cook would only give a vertical plus sign in each pixel whose intersection of lines resides randomly within each pixel. The orientation of the line samples would not be altered. Deering also does not disclose or

suggest line samples, particularly their orientation. Accordingly, claim 109 and claims 110-111, which depend therefrom, are allowable over the cited references. Applicants submit that claim 122 should be allowable for at least the same rationale as discussed with respect to claim 109.

**35 USC 103 rejection, Jones**

**Claims 112, 113, 123, and 124**

Applicants submit that claims 112, 113, 123, and 124 should be allowable for at least the same rationale as discussed with respect to claim 1.

**35 USC 103 rejection, Cook**

**Claim 115**

Applicants submit that claim 115 should be allowable for at least the same rationale as discussed with respect to claim 1.

**CONCLUSION**

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.



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PATENT

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

Respectfully submitted,



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